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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Myrtil Kahn

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EXAMINER

NGUYEN, KHANH TUAN

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

11/18/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/551,948	<b>Applicant(s)</b> KAHN ET AL.	
	<b>Examiner</b> KHANH T. NGUYEN	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 25-44 and 50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25-44 and 50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>n/a</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment filed on 09/11/2008 is entered and acknowledged by the Examiner. Claims 25-44 and newly added claim 50 are currently pending in the instant application. Claims 1-24 and 45-49 have been canceled.

The objection to the specification for being in improper format for not containing appropriate section headings and for lacking a brief description of the drawings for Figs. 1-18 is withdrawn in light of Applicant's amendment. The objection of claims 31, 38 and 44 for using improper Markush style language for the reasons in item 7 on page 4 of the Office Action is withdrawn in light of Applicant's amendment. The objection of claim 32 for being an improper dependent claim for failing to further limit the subject matter of a previous claim is withdrawn in light of Applicant's remark.

The rejection of claims 25-40 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over O'BRIEN et al. (US 2007/0140951A) is withdrawn in view of priority date to French application no. 03/04285. The further Examiner confirmed and recited O'BRIEN et al. reference on the PTO-892 and a copy accompanies this Office Action. The rejection of claims 25-40 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over MURRAY et al. (US 6,262,129) is withdrawn in view Applicant's remark. The rejection of claim 41 rejected under 35 U.S.C. § 103(a) as obvious over

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O'BRIEN or MURRAY in view of STROUSE (US 2006/0061017) is withdrawn in view Applicant's remark. The rejection of claim 41 rejected under 35 U.S.C. § 103(a) as obvious over O'BRIEN or MURRAY in view of STROUSE (US 2006/0061017) is withdrawn in view Applicant's remark. The rejection of claims 42-44 rejected under 35 U.S.C. § 103(a) as obvious over O'BRIEN or MURRAY in view of KORTSHAGEN (US 2006/0051505) is withdrawn in view Applicant's remark.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

The Applicant benefits the priority date of foreign application, FRANCE 03/04285, filed on 04/07/2003.

### ***Claim Rejections - 35 USC § 102/103***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 25-44 and 50 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Pub. 2004/0247503 A1 (hereinafter Hyeon).

Hyeon teaches a method of fabricating highly crystalline and monodisperse nanoparticles (Abstract). The method may contain an organometallic compound comprising a transition metal of Group II to Group X, which includes zinc, with a cyclopentadienyl [C<sub>5</sub>H<sub>5</sub>] ligand [0022]. The organometallic compound of Hyeon is considered readable on the claimed organometallic precursor. At Fig. 1, Hyeon teaches a step (A) of producing a metal nanoparticle dispersion containing said organometallic precursor, a surfactant and a solvent [0016]. Hyeon teaches the surfactant may include

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an oleic acid, octylamine, alkyl thiol, and the mixture thereof [0023]. The oleic acid surfactant of Hyeon is readable on the acid ligand and the octylamine surfactant or thiol surfactant of Hyeon is readable on the base ligand recited in claims 26-33. Hyeon further teaches the same solvent, such as THF, as recited in claims 35 and 40 [0025]. The metal nanoparticle dispersion of Hyeon is considered readable on the claimed liquid solution because Hyeon's metal nanoparticle dispersion comprises of all the same or substantially similar ingredients as claimed. Hyeon teaches the metal surfactant complex may be synthesis at temperature ranging from 30 to 200°C [0027], as recited in claims 36 and 37. Further, Hyeon teaches a step (F) of forming a metal oxide nanoparticle by adding an oxidant to the metal nanoparticle dispersion to oxidize the nanoparticles [0016]. Hyeon teaches an oxidant such as trimethylamine N-oxide and hydrogen peroxide [0024], as recited in claim 38. The addition of oxidizing agent to the metal nanoparticle maybe carried out without stirring because trimethylamine N-oxide and hydrogen peroxide can readily oxidize the surface of said metal nanoparticle, art would be well aware that metal particles, particularly particles of very small size and thus high surface area, without stirring as recited in claim 39. Hyeon further teaches said organometallic precursor, a surfactant and an oxidant may be mixed at low temperature ranging from -100 to 200°C [0030]. as recited in claims 36 and 37. The volatile solvent of Hyeon inherently evaporates under the reaction conduction during oxidation as recited in claim 34. Moreover, the transitional term "comprising" is inclusive or open-ended and does not exclude additional, unrecited elements or method steps in according to the MPEP. Thus, Hyeon is considered to teach the a method of preparing

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a crystalline monodisperse nanoparticle comprising all the steps recited in claims 25 and 50.

The reference specifically or inherently meets each of the claimed limitations in their broadest interpretations. The reference is anticipatory.

In the alternative that the above disclosure is insufficient to anticipate the above listed claims, it would have nonetheless been obvious to the skilled artisan to produce the claimed nanoparticle, any minor modification necessary to meet the claimed limitations, such as using a different starting material such an organometallic precursor as recited in claims 41-44 in a known process would have been within the purview of the skilled artisan because Hyeon teaches the same or substantially similar method containing an organometallic compound of a transition metal of Group II to Group X, with a cyclopentadienyl [ $C_5H_5$ ] ligand [0022]. The court has held that the use of a different starting material in a known process is obvious if the method is otherwise the same. *Ex parte Orser* 14 USPQ 2d 1987 (BPAI 1990); *Ex parte Kifer* 5 USPQ 2d 1904 (BPAI 1988); *In re Durden* 226 USPQ 359 (Fed. Cir. 1985); *In re Payne* 203 USPQ 245 (CCPA 1979); *In re Kanter* 158 USPQ 331 (CCPA 1968); *In re Hoeksema* 142 USPQ 733 (CCPA 1964); *In re Neugebauer* 141 USPQ 205 (CCPA 1964); *In re Larsen* 130 USPQ 209 (CCPA 1961); *In re Leshin* 12 USPQ 41 6 (CCPA 1960). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the organometallic precursor of Hyeon with an organometallic precursor as recited in claims 41-44 because such an organometallic precursor is known and is used in the art to produce nanoparticle. Further, the substitution of  $Zn(C_5H_5)$  of Hyeon for

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$\text{In}(\text{C}_5\text{H}_5)$  precursor would have yielded a predictable result because structurally similar organometallic precursor compounds, i.e. cyclopentadienyl organometallic such as  $\text{In}(\text{C}_5\text{H}_5)$  and  $\text{Zn}(\text{C}_5\text{H}_5)$ , are generally expected to have similar properties. In addition, it would have been obvious to the skilled artisan to produce the claimed metal nanoparticle without stirring during the oxidation because a skilled artisan would be well aware that metal particles, particularly particles of very small size which have high surface area, will oxidize readily without stirring.

### **Other Prior Art Cited**

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rataboul et al., "Synthesis and characterization of monodisperse zinc and zinc oxide nanoparticles from the organometallic precursor  $[\text{Zn}(\text{C}_6\text{H}_{11})_2]$ ," teaches a  $\text{Zn}(\text{C}_6\text{H}_{11})_2$  organometallic precursor.

Nayral et al., "Synthesis of Tin and Tin Oxide Nanoparticles of Low Size Dispersity for Application in Gas Sensing," teaches a  $\text{Sn}(\text{N}(\text{CH}_3)_2)_2$  organometallic precursor.

### ***Response to Arguments***



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7. Applicant's arguments with respect to claims 25-44 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH T. NGUYEN whose telephone number is (571)272-8082. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Kopec/  
Primary Examiner, Art Unit 1796

/KTN/  
11/10/2008

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